



## QUICK REFERENCE GUIDE



### Vaisala Surge Protector WSP150



- Superior 3-stage surge protection
- Tolerates up to 10 kA surge currents
- Both differential and common mode protection on each channel
- Filtering against HF and RF noise
- Two power channels ( $\pm 43V$ , 1.5A) and two data channels ( $\pm 13V$ , 0.16A)
- Can be used with all Vaisala wind and weather instruments
- Adjustable mounting clamp provided for pole masts,  $\varnothing 30\text{ mm} \dots 102\text{ mm}$
- Environmental protection class IP66

## DESCRIPTION

Vaisala Surge Protector WSP150 is a compact-size transient overvoltage suppressor designed for outdoor use. It can be used with Vaisala wind and weather instruments and transmitters to protect them against surges entering through the power and signal cables. For example, a nearby lightning strike may induce high-voltage surge not tolerable by the integral surge suppressors of the instrument. Thus additional protection is needed in regions with frequent, severe thunderstorms, especially when long line cables ( $> 30\text{m}$ ) are used.

Vaisala recommends using the surge protector in installations on top of high buildings or masts and in sites on open grounds – in all sites, where there is an elevated risk of lightning strike. The WSP150 also provides additional filter for blocking the HF and RF interference induced into the cables in installations to radio transmitter masts, power line carrier towers etc.

The WSP150 has four channels, two dedicated for power lines and two for data lines. Each channel uses a three-stage protection scheme as follows: first there are discharge tubes, then voltage dependent resistors (VDR), and finally transient zener diodes. Between each stage there are either series inductors or resistors. Both differential and common mode protection is provided for each channel: across the wire pair, against the operating voltage ground, and against earth.

The WSP150 has a weather-proof IP66 plastic housing with metal reinforcement, mountable to  $\varnothing 30\text{ mm} \dots 102\text{ mm}$  standard pole masts with an adjustable mounting clamp provided.

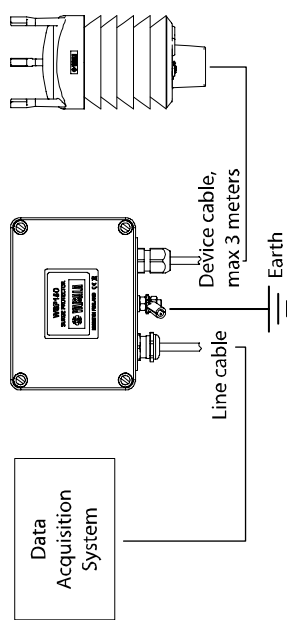


Figure 1 Operation principle

**CAUTION** Device cable shall be as short as practical to minimize surge induction to the cable. Grounding of the unit must be done either through the mast or with 16mm<sup>2</sup> copper wire from the earth terminal to earth ground.

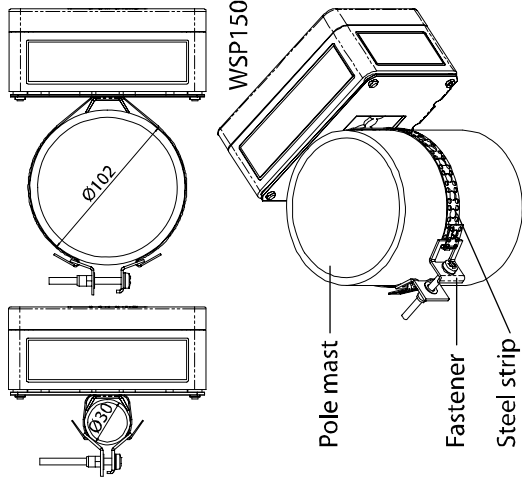


Figure 2 Installing WSP150 to pole mast

## INSTALLATION

Figure 2 illustrates mounting of the WSP150 to a pole mast with the adjustable mounting clamp. For installation, follow the procedure below:

1. Attach the unit to the mast close to the protected unit with the adjustable mounting clamp, see Figure 2. Fix the steel strip beneath the latch in the back of the enclosure. Fix the steel strip around the pole mast. You may shorten the strip to a suitable length. Attach the steel strip ends to the fastener and fasten the unit to the mast by tightening the fastener's screw.
2. Open the 4 plastic screws attaching the unit cover. Remove the cover.
3. With all voltages disconnected, enter the line cable through the leftmost cable gland and make the input wiring to the line terminals. Follow the instructions in Figures 3 to 6. For best protection against RF noise, follow the shielding instructions in Figure 8. Make sure no cable shield mesh gets on the circuit board. Carefully tighten the line cable gland.
4. Enter the device cable through the rightmost cable gland and make the output wiring to the device terminals. Follow the instructions in Figures 3 to 5. Carefully tighten the device cable gland.
5. Carefully reattach the enclosure cover with the four plastic screws.

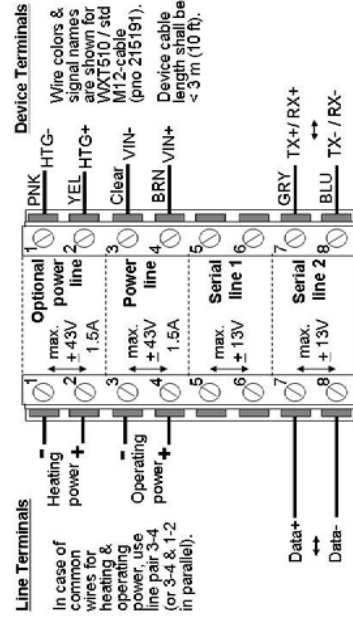


Figure 3 Wiring instructions for RS-485

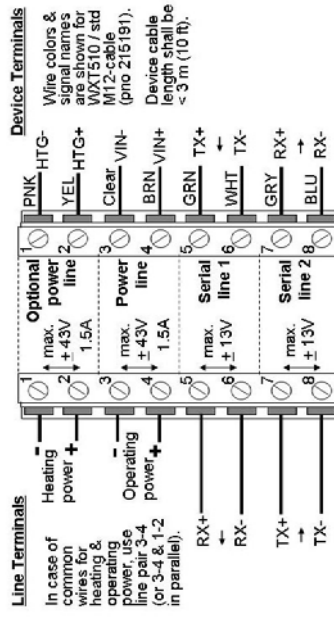


Figure 4 Wiring instructions for RS-422

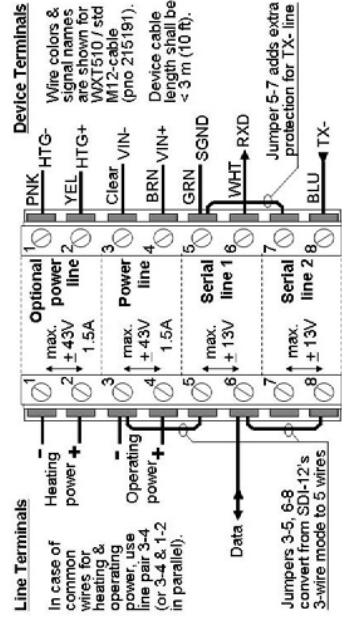


Figure 5 Wiring instructions for SDI-12

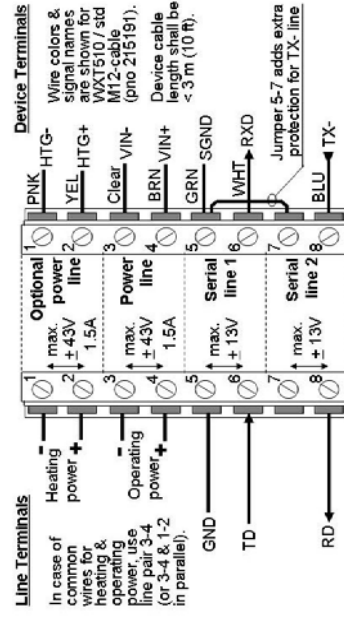


Figure 6 Wiring instructions for RS-232

### TECHNICAL DATA

Property	Description / Value
Allowed input voltage (across channel line pair and from line to GND, terminals #3)	Power channels: max. $\pm 43$ V
	Data channels: max. $\pm 13$ V
Allowed input common mode voltage	Any line to earth: max. $\pm 72$ V
Allowed throughput current	Power lines: max. 1.5 A
	Data lines: max. 0.16 A
Throughput resistance (per line)	Power lines: 0.3 ohms
	Data lines: 15 ohms
Turn-on voltage	Power channels: max. $\pm 60$ V
	Data channels: max. $\pm 16$ V
Surge current	To earth: max. 10 kA
	Differential: max. 5 kA
EMC surge tolerance	EN 61000-4-5 (4 kV, 2kA)
	IEEE C62.45 (6kV, 3kA)
Installation and maintenance work temperature	-40...+70°C (-40...+158°F)
	Operating and storage temperature: -52...+70°C (-60...+158°F)
Environmental protection class	IP66 (NEMA 4X)
	Dimensions (w x h x d) 130 x 94 x 58 mm 130 x 120 x 69 mm
Weight	0.65 kg
Housing materials	Polycarbonate, stainless steel
Cable dimensions	$\varnothing$ 4 - 8 mm
Wire dimensions	$\varnothing$ 0.4 - 1.7 mm (AWG 26 - 14)

### Dimensions

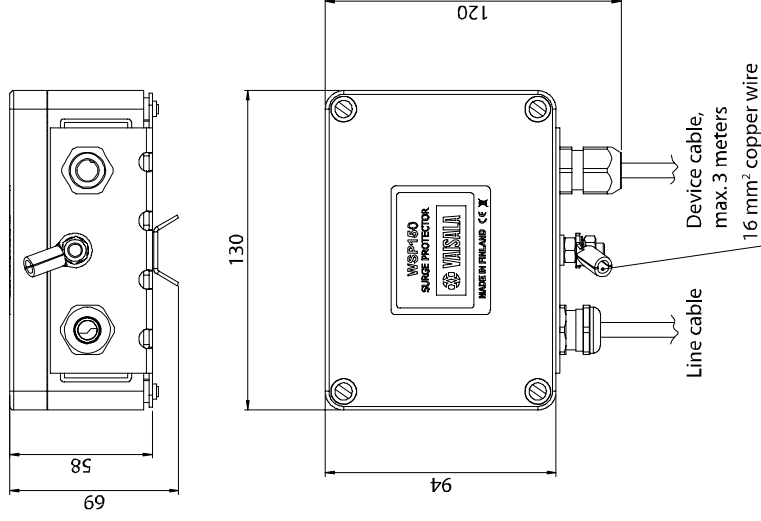


Figure 7 Dimensions

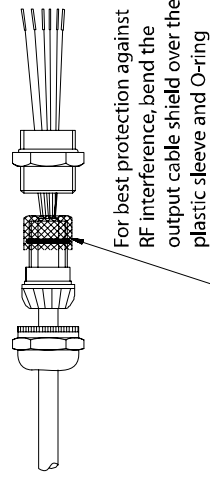


Figure 8 Line cable shielding